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# PATENT ABSTRACTS OF JAPAN

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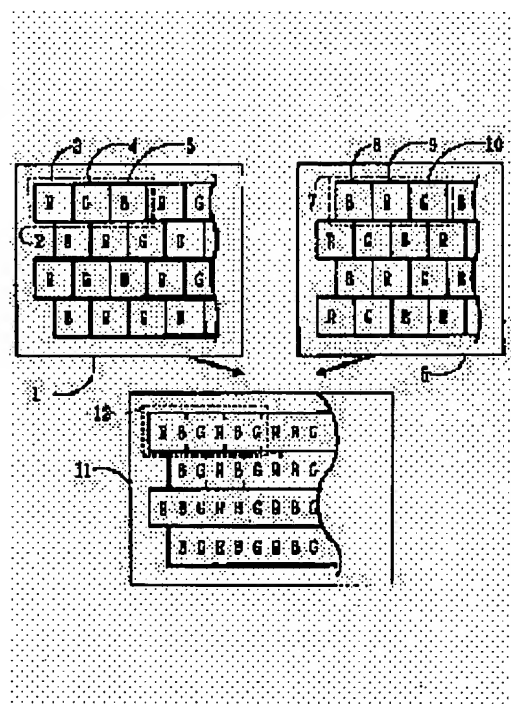
(22)Date of filing : **20.01.1993** (72)Inventor : **KAGAMI SATOSHI**

## (54) LIQUID CRYSTAL PROJECTOR

### (57)Abstract:

**PURPOSE:** To improve resolution by brightening the screen of the liquid crystal projector.

**CONSTITUTION:** The pixel arrangement of one liquid crystal projector is formed as repeating arrays of red, blue and green. The arrays of blue, green and red are repeated by shifting the pixels by as much as half the pixel from the above- mentioned arrays, by which a display panel is constituted. The pixel arrangement of the other liquid crystal projector is constituted of the repeating arrays of blue, green and red formed by shifting the pixels by half the pixel from the display panel and the repeating arrays of red, blue and green formed by shifting the pixels by half the pixel from these arrays. The respective liquid crystal projectors are superposed on each other, by which one sheet of the screen is constituted.



## LEGAL STATUS

[Date of request for examination]

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rejection or application converted  
registration]

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CLAIMS

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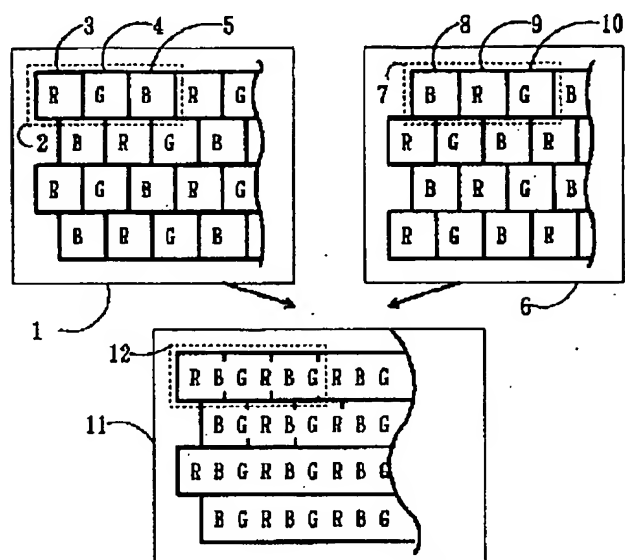
[Claim(s)]

[Claim 1] The display panel which shifted the half-pixel part pixel for one pixel array to red, blue, the train of a green repetition, and this train, repeated the train of blue, green, and red and was constituted, Liquid crystal projector equipment which shifts a half-pixel part pixel for the pixel array of another side to said display panel, shifts a half-pixel part pixel to blue, green, a red repetition train, and this train, and is characterized by considering as red, blue, and the display panel that consisted of trains of a green repetition.

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[Translation done.]

Drawing selection [Representative drawing ▼]



[Translation done.]

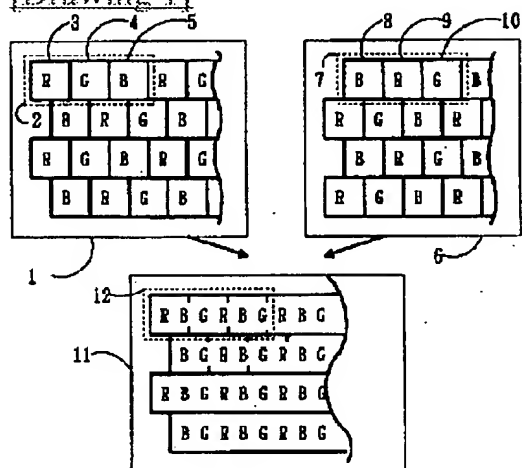
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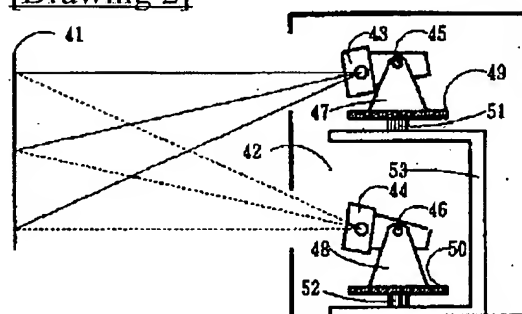
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## DRAWINGS

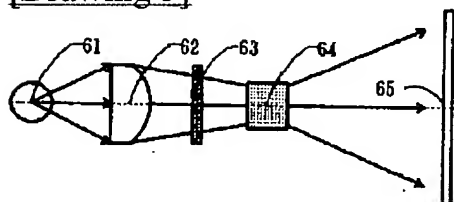
[Drawing 1]



[Drawing 2]



[Drawing 3]



[Translation done.]

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to a liquid crystal projector.

[0002]

[Description of the Prior Art] A liquid crystal panel is theoretically used for a liquid crystal projector instead of the slide of the conventional slide projector. An example of the conventional one-sheet type electrochromatic display projector is shown in drawing 4. In drawing, 61 is the light source, 62 is a condenser lens, 63 is a transparency mold liquid crystal display panel, 64 is a projection lens, and 65 is a screen. A liquid crystal panel is monochrome fundamentally, and in order to obtain the image of a color, he is trying to attach a color filter on the surface of a liquid crystal panel. Since size of a projector lens must also be enlarged in connection with this and the cost of a lens will go up in the present if size of a liquid crystal panel is enlarged when manufacturing the liquid crystal display panel of the above-mentioned liquid crystal projector, the liquid crystal panel of not much big size cannot be used. Moreover, about the size of the pixel which constitutes a liquid crystal panel, it is difficult to make it without limit small from the processing technique of the detailed pixel pattern in current. For the above-mentioned reason, it sets to current, and is about 100,000 a little less than (length 300 pixel x width 300 about a pixel) pixels as 3 inches with the (diagonal line) about the size of the max of a liquid crystal panel for example. The degree of integration of extent serves as a limitation. Since the number of picture elements is set to one third for the above-mentioned reason compared with the case of monochrome when the 3 inches liquid crystal panel which is displayed by 100,000 pixels in the case of monochrome is used as a display panel of the color which constitutes one picture element by R (red), B (blue), and G(green) 3 pixel, resolution will fall so much.

[0003]

[Problem(s) to be Solved by the Invention] As mentioned above, when big screen projection was performed using the conventional liquid crystal display panel, brightness fell with expansion, the screen became dark, and it had the problem that the granularity of resolution was conspicuous. Even if it solves and expands the above-mentioned problem, resolution does not fall, but this invention is to offer the liquid crystal projector to which

a screen does not become dark.

[0004]

[Means for Solving the Problem] In order to solve the above-mentioned technical problem, this invention the pixel array of one liquid crystal projector Consider as red, blue, and the train of a green repetition, and a half-pixel part pixel is shifted to this train. The train of blue, green, and red is used as the display panel repeated and constituted, and a half-pixel part pixel is shifted for the pixel array of the liquid crystal projector of another side to said display panel. Blue, green, and a red repetition train, To this train, the half-pixel part pixel was shifted and it constituted from red, blue, and a train of a green repetition, and each is piled up and the screen of one sheet was constituted.

[0005]

[Function] As mentioned above, when an image pattern combines two sets of the same electrochromatic display projectors and compounds a screen, the brightness and resolution of a screen can double [ about ].

[0006]

[Example] The liquid crystal projector by this invention consists of two sets of projectors. It is based on a Fig. below and the example of the liquid crystal projector by this invention is explained to a detail. The example of drawing 1 is the case where pile up the screen of two sets of projectors and one screen is compounded, 1 is the screen of one projector, and 2 is the color picture element constituted by three colors of R (red), G (green), and B (blue). 3-5 are pixels which constitute said R, G and B, and each part. 6 is the screen of the projector of another side and 7 is the color picture element constituted by three colors of R (red), G (green), and B (blue). 8-10 are pixels which constitute said R, G and B, and each part. In the case where 11 piled up the screen of each of said projector and one screen is compounded, 12 is 2 pixels of the color constituted by three colors of R (red), G (green), and B (blue). It becomes a screen as shown in 12 by compounding one screen by two sets of said projectors. Drawing 2 is the explanatory view which adjusts whenever [ angle-of-projection / of two above-mentioned projection devices ] with an adjustment machine whenever [ angle-of-projection ], and compounds a screen, and, as for 41, 42 is the interior of a liquid crystal projector on a screen. a revolving shaft for 43 and 44 to be projection devices and for 45 and 46 adjust the include angle of the perpendicular direction of said projection device -- it is -- support plates 47 and 48 -- 4s \*\*\*\*\*. With the turntable for adjusting the horizontal include angle of said projection device, 49 and 50 are interlocked with the revolving shaft of 51 and 52, and rotate. 53 is the susceptor of an adjustment machine whenever [ said projection device and angle-of-projection ]. By such configuration, a respectively separate screen is projected on a screen with two projection devices, make it a multiscreen, a screen is made bright by piling up each screen, or resolution can be improved.

[0007]

[Effect of the Invention] As explained above, according to the liquid crystal projector by this invention, it is effective in the ability to double the brightness of a screen and double resolution by compounding two screens.



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[Translation done.]